

CLAIMS:

1. An audio reproduction apparatus comprising:
 - input means for inputting an input audio signal;
 - an output for outputting an output audio signal derived from the input audio signal;
 - 5 - a cost input for inputting a mathematical cost derived from a measurement, which measurement is user-influenceable; and
 - a conditioning unit, capable of delivering the output audio signal in dependence of the mathematical cost, characterized in that the conditioning unit comprises an audio processing means arranged to process the input audio signal to derive the output audio signal with a reproduction quality in
10 dependence of the mathematical cost.
2. An audio reproduction apparatus as claimed in claim 1, wherein the reproduction quality comprises a three-dimensional position of a virtual sound source, the
15 audio processing means being able to simulate the virtual sound source by means of the output audio signal.
3. An audio reproduction apparatus as claimed in claim 2, wherein the audio processing means comprises a filter arranged to simulate the position of the virtual sound
20 source by deriving the output audio signal by filtering the input audio signal with a user dependent head related transfer function.
4. An audio reproduction apparatus as claimed in claim 2, wherein the audio processing means comprises an audio processing unit arranged to simulate the position of the
25 virtual sound source by changing a property of the output audio signal selected from signal amplitude and added reverberation.
5. An audio reproduction apparatus as claimed in claim 1, wherein the audio processing means is arranged to derive a second output audio signal, together with the output

audio signal constituting a stereo audio signal, the audio processing means being arranged to derive the stereo audio signal from the input audio signal with a specified stereo quality dependent on the mathematical cost.

- 5 6. An audio reproduction apparatus as claimed in claim 1, wherein the reproduction quality comprises a specification of a distribution of frequencies of the output audio signal.
7. An audio reproduction apparatus as claimed in claim 1, comprising a first
10 quality calculation unit for determining the reproduction quality for use in the subsequent derivation of the output audio signal by the audio processing means.
8. An audio reproduction apparatus as claimed in claim 1, comprising quality measuring means for measuring an output quality measure of the output audio signal, and
15 comprising parameter value calculation means for calculating a parameter value, for use in the subsequent derivation of the output audio signal by the audio processing means.
9. An audio reproduction apparatus as claimed in claim 1, wherein a mathematical cost calculation unit is comprised which is arranged to derive the mathematical
20 cost from the measurement receivable from a measurement device.
10. An audio reproduction apparatus as claimed in claim 9, wherein the mathematical cost calculation unit is arranged to derive the mathematical cost based on a difference between the measurement and a chosen value.
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11. An audio reproduction apparatus as claimed in claim 9, wherein the mathematical cost calculation unit is arranged to derive the mathematical cost from a biometric measurement.
- 30 12. An audio feedback system comprising:
- an audio source;
- a measurement device arranged to deliver a measurement which is user-influenceable;

- a mathematical cost calculation unit, arranged to derive a mathematical cost from the measurement;

- a sound production device; and

- a conditioning unit arranged to receive an input audio signal from the audio

5 source, to receive the mathematical cost, and to deliver to the sound production device an output audio signal derived from the input audio signal, in dependence of the mathematical cost,

characterized in that the conditioning unit comprises an audio processing means arranged to process the input audio signal to derive the output audio signal with a reproduction quality in
10 dependence of the mathematical cost.

13. A method of deriving an output audio signal from an input audio signal in dependence of a mathematical cost derived from a measurement which is user-influenceable, characterized in that the output signal is derived with a specified reproduction quality
15 dependent on the mathematical cost.

14. A computer program for execution by a processor, describing the method of claim 13.

20 15. A data carrier storing the computer program of claim 14.